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JOHN BRUCKNER, P.C. P.O. BOX 490 FLAGSTAFF, AZ 86002			EXAMINER KIM, DAVID S	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/767,401

**Applicant(s)**

MOSTERT ET AL.

**Examiner**

DAVID S. KIM

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 April 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 12, 19-25, 34, 42-44, 54-58, 60, 62 and 66 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12, 19-25, 34, 42-44, 54-58, 60, 62 and 66 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### Drawings

1. Applicant's response to the objection the drawing in the previous Office Action (mailed on 17 October 2007) is noted and appreciated. Applicant responded by filing drawing replacement sheets. The drawings were received on 17 April 2008. Fig. 1 is not approved. Figs. 2 and 3 are approved.
2. The amendment filed on 17 April 2008 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows:

Fig. 1 is not approved due to **new matter**. In particular, notice the new lead lines from RF OUT [14] to the CPEs and the new lead lines from the CPEs to RF IN [15] in Fig. 1. Compare these new lead lines with the claim language of **claim 42**:

**"broadcasting at least a portion of the downstream signal to a plurality of users and conveying a signal from at least one of the plurality of users to an input port of the another downstream combiner as the another upstream signal"** (emphasis Examiner's).

These new lead lines do fit the language of claim 42. However, claim 42 (and supporting portions of Applicant's original disclosure) does *not* disclose the level of detail of the new lead lines shown in Fig. 1. In particular, notice that **the new lines connect to the CPEs**. This implies that the "downstream signal" reaches the "plurality of users" in claim 42 **through the CPEs**. However, Applicant's original disclosure does not support this level of detail regarding **the connection of these new leads lines to the CPEs**.

For example, paragraph [0022] more broadly discloses, "The analog broadcast receiver 13 outputs the video signals on RF sub-carriers 14 to an electrical distribution system, usually, but not necessarily, a coaxial cable-based distribution system". This does not imply, suggest, or teach this level of detail regarding **the connection of these new leads lines to the CPEs**.

Also, for example, paragraph [0023] more broadly discloses, "Analog return signals on RF sub-carriers 15, which are typically, but not necessarily, generated by subscribers' cable modems, are input to one or more analog return transmitters 16, which may or may not be co-located with the analog broadcast receiver 13. For clarity of presentation in FIG. 1, only one return transmitter 16 is shown, but in principle

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the outputs of multiple transmitters may be optically multiplexed together". This does not imply, suggest, or teach this level of detail regarding ***the connection of these new leads lines to the CPEs***.

Accordingly, Fig. 1 is not approved due to **new matter**. Therefore, the drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the following features must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

As a remedy, Examiner respectfully suggests Applicant to amend Fig. 1 in the following ways:

- introduce a new plurality of users in Fig. 1.
- introduce downstream broadcast connections between analog broadcast receiver 13 and the new plurality of users.
- introduce upstream connection(s) between at least one of the new plurality of users and analog return transmitter 16.

Applicant is required to cancel the new matter in the reply to this Office Action.

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the following features must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

In particular, notice the following limitations from independent **claim 54**:

**"a downstream combiner...**wherein the downstream combiner directs an analog video optical carrier to a bandpass input-output port that is connected by an optical fiber to an *analog broadcast receiver*,...

**another downstream combiner...**wherein an optical output of an *analog return transmitter* is connected by a separate optical transmission fiber to an input-output port of the another downstream combiner, which passes the analog return optical signal to the common port and then onto the another optical signal conductor;

**a drop device** coupled to a downstream output port of ***the downstream combiner***,...

**an add device** coupled to a downstream input port of the ***another downstream combiner***"

(emphasis Examiner's).

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This "the downstream combiner" corresponds to BWDM Combiner 8 in Fig. 1 due to the detail about the analog broadcast receiver 13. The "another downstream combiner" corresponds to BWDM Combiner 21 in Fig. 1 due to the detail about the analog return transmitter 16. According to the claim language, the "drop device" (35 in Fig. 1) should be coupled to BWDM Combiner 8, and the "add device" (42 in Fig. 1) should be coupled to BWDM Combiner 21. However, such is not the case. According to Fig. 1, "drop device" (35 in Fig. 1) should be coupled to BWDM Combiner 21 (the "another downstream combiner"), and the "add device" (42 in Fig. 1) should be coupled to BWDM Combiner 8 ("the downstream combiner"). Therefore, these limitations **are not shown** in the drawings.

As a remedy, Examiner respectfully suggests Applicant to amend claim 54 in the following ways:

**"a drop device** coupled to a downstream output port of **the another downstream combiner**,...

**an add device** coupled to a downstream input port of the **another downstream combiner"**

(emphasis Examiner's).

4. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

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**Claim Objections**

5. Applicant's response to the objection to **claims 28-32** in the previous Office Action (mailed on 17 October 2007) is noted and appreciated. Applicant responded by cancelling claims 28-32. Accordingly, the previous objection is moot and presently withdrawn.

**Claim Rejections - 35 USC § 112**

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. **Claims 54-58, 60, 62, and 66** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Applicant's response to the rejection of the claims under 35 U.S.C. 112, first paragraph, in the previous Office Action (mailed on 17 October 2007) is noted and appreciated. Applicant responded with the following argument:

Claims 54-58, 60, 62 and 66 stand rejected under 35 UCS 112(1) as not complying with the written description requirement. These limitations are described in claims 45 and 58 as originally filed and, therefore, these limitations are part of the specification as originally filed. These connections are within the skill of those of skill in the art of hybrid fiber coax engineering. The corrections to Figure 1 of this application discussed above depict these connections (limitations). Paragraph [0025] is amended to explicitly recite these limitations; support for which is found in claims 45 and 58 are originally filed. Accordingly, withdrawal of this rejection is respectfully requested.

(REMARKS, p. 9, last full paragraph).

Examiner respectfully notes that the previous amendment to the claim 54 (filed on 01 August 2007) (1) incorporated limitations from original claims 45, 54, 59, and 63 and (2) introduced new limitations. If amended claim 54 (filed on 01 August 2007) *only* (1) incorporated limitations from original claims 45, 54, 59, and 63, then, of course, there would have been no new matter. However, amended claim 54 (filed on 01 August 2007) also (2) introduced new limitations. The combined effect of (1) and (2) changed the scope of the claims so that some elements of amended claim 54 constituted **new matter**.

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In particular, notice the following limitations from independent claim 54:

**"a downstream combiner...**wherein the downstream combiner directs an analog video optical carrier to a bandpass input-output port that is connected by an optical fiber to an *analog broadcast receiver*,...

**another downstream combiner...**wherein an optical output of an *analog return transmitter* is connected by a separate optical transmission fiber to an input-output port of the another downstream combiner, which passes the analog return optical signal to the common port and then onto the another optical signal conductor;

**a drop device** coupled to a downstream output port of *the downstream combiner*,...

**an add device** coupled to a downstream input port of the *another downstream combiner*"  
(emphasis Examiner's).

This "the downstream combiner" corresponds to BWDM Combiner 8 in Fig. 1 due to the detail about the analog broadcast receiver 13. The "another downstream combiner" corresponds to BWDM Combiner 21 in Fig. 1 due to the detail about the analog return transmitter 16. According to the claim language, the "drop device" (35 in Fig. 1) should be coupled to BWDM Combiner 8, and the "add device" (42 in Fig. 1) should be coupled to BWDM Combiner 21. However, such is not the case. According to Fig. 1, "drop device" (35 in Fig. 1) should be coupled to BWDM Combiner 21 (the "another downstream combiner"), and the "add device" (42 in Fig. 1) should be coupled to BWDM Combiner 8 ("the downstream combiner"). Moreover, the original claims did not disclose this configuration. Therefore, these limitations introduce **new matter**, and Examiner respectfully maintains the standing rejection. Also, contrary to Applicant's argument, Fig. 1 does not show all the limitations of amended claim 54.

As a remedy, Examiner respectfully suggests Applicant to amend claim 54 in the following ways:

**"a drop device** coupled to a downstream output port of *the another downstream combiner*,...

**an add device** coupled to a downstream input port of the *another downstream combiner*"  
(emphasis Examiner's).

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. **Claims 12, 19-25, 34, and 44** are rejected under 35 U.S.C. 103(a) as being unpatentable over Giles (U.S. Patent No. 5,633,741) in view of Dail (U.S. Patent No. 5,864,748) and Krimmel et al. ("Wavelength division multiplexed CATV distribution service overlay on two-fibre passive optical dialogue star networks", hereinafter "Krimmel").

**Regarding claim 12**, Giles discloses:

A method (Fig. 9), comprising:

propagating a downstream signal (e.g., signal from 90 to 98) on an optical signal conductor (e.g., fiber between 98 and 100) from an upstream combiner (e.g., 98) to a downstream combiner (e.g., 100);

counter-propagating an upstream signal (e.g., signal from 91 to 100) on the optical signal conductor (e.g., fiber between 98 and 100) from the downstream combiner (e.g., 100) to the upstream combiner (e.g., 98), wherein the upstream signal includes a digital signal (col. 9, l. 27; col. 10, l. 35);

propagating another downstream signal (e.g., signal from 90 to 99) on another optical signal conductor (e.g., fiber between 99 and 101) from another upstream combiner (e.g., 99) to another



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downstream combiner (e.g., 101), wherein the another downstream signal includes a digital signal (col. 9, l. 27; col. 10, l. 35); and

counter-propagating another upstream signal (e.g., signal from 91 to 101) on the another optical signal conductor (e.g., fiber between 99 and 101) from the another downstream combiner (e.g., 101) to the another upstream combiner (e.g., 99).

Giles does not expressly disclose:

wherein the downstream signal includes an analog video broadcast signal; and

wherein the another upstream signal includes an analog return signal.

However, the use of downstream and upstream analog signals is known in the art, as exemplified by Dail (downstream analog and upstream analog in Fig. 2, col. 4, l. 5-8, 26-27). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to employ such analog signal channels in the method of the prior art of record. One of ordinary skill in the art would have been motivated to do this since Giles expressly discusses the consideration of analog transmission and cable TV systems (Giles, col. 1, l. 43-47), and Dail provides a suitable example of analog transmission in a cable TV system that employs optical fiber communication technology (Dail, Fig. 2, abstract).

Moreover, Krimmel expressly teaches the configuration of propagating an analog signal on an optical signal conductor and counter-propagating a digital signal on the same optical signal conductor (Fig. 1). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to implement such a configuration in the optical signal conductors of the prior art of record. One of ordinary skill in the art would have been motivated to do this since Giles expressly discusses the consideration of analog as well as digital systems, e.g., cable TV and WDM (Giles, col. 1, l. 43-47), and Krimmel provides a suitable example for taking such considerations and providing details about how to actually implement an analog and digital system in a cable TV environment that employs WDM technology (Krimmel, p. 768, Introduction). For example, notice that Giles already teaches counter-propagating communication signals on an optical signal conductor (e.g., Fig. 9, fiber between 98 and 100, fiber between 99 and 101), wherein these communication signals are *digital*. Clearly, Krimmel teaches

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that one could also implement *analog* communications on the same optical signal conductor in a way that would counter-propagate *digital* communications. In the consideration of combining analog and digital signals, Krimmel provides a comparison of two ways of combining such signals: co-propagating and counter-propagating (Krimmel, p. 769, col. 1, last full paragraph – col. 2, end of the article). Krimmel shows that the counter-propagating way provides relatively better performance in the area of interference suppression (Krimmel, p. 769, col. 2, Conclusion). Accordingly, one would be suitably motivated to provide *analog* communications on an optical signal conductor in a way that would counter-propagate *digital* communications on the same optical signal conductor.

**Regarding claim 19-23**, Giles in view of Dail and Krimmel does not expressly disclose:

(claim 19) The method of claim 18, wherein the digital signal includes a packet switched signal.

(claim 20) The method of claim 19, wherein the packet switched signal includes a cell-switched signal.

(claim 21) The method of claim 20, wherein the cell-switched signal includes an asynchronous transfer mode digital data signal.

(claim 22) The method of claim 19, wherein the packet switched signal includes a frame switched signal.

(claim 23) The method of claim 22, wherein the cell-switched signal includes a synchronous transfer mode digital data signal.

However, all of these types of signals are common and well-known types of communication signals. Implementing the method of Giles in view of Dail and Krimmel with any or all of these types of communication signals simply present obvious variations of the basic method of Giles in view of Dail and Krimmel.

**Regarding claim 24**, Giles in view of Dail and Krimmel discloses:

The method of claim 19, further comprising wavelength demultiplexing (Giles, upper demultiplexer in 92 in Fig. 9) the upstream signal after propagating the upstream signal on the optical signal conductor from the downstream combiner to the upstream combiner.

**Regarding claim 25**, Giles in view of Dail and Krimmel discloses:

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The method of claim 19, further comprising adding data from a customer premises (Giles, adding data from any suitable data source in 91 for the signal from 91 to 100) to the upstream signal before propagating the upstream signal on the optical signal conductor from the downstream combiner to the upstream combiner.

**Regarding claim 34,** Giles in view of Dail and Krimmel discloses:

The method of claim 28, further comprising dropping data to a customer premises (Giles, dropping data to any suitable receiver in 93 for the signal from 90 to 99) from the another downstream signal after propagating the another downstream signal on the another optical signal conductor from the second upstream combiner to the another downstream combiner.

**Regarding claim 44,** Giles in view of Dail and Krimmel discloses:

A process of operating a cable access television network comprising the method of claim 12 (Giles, col. 1, l. 43-47).

11. **Claim 42** is rejected under 35 U.S.C. 103(a) as being unpatentable over Giles in view of Dail and Krimmel, as applied to the claims above, and further in view of Kim et al. (U.S. Patent No. 6,445,472 B1, hereinafter "Kim") and Schemmann et al. (U.S. Patent Application Publication No. 2006/0165413 A1, hereinafter "Schemmann").

**Regarding claim 42,** Giles in view of Dail and Krimmel discloses:

The method of claim 12, further comprising broadcasting (Dail, col. 4, l. 7-8) at least a portion of the downstream signal to a plurality of users (Dail, "broadcasting" strongly suggests "a plurality of users").

Giles in view of Dail and Krimmel does not expressly disclose:

conveying a signal from at least one of a plurality of users to an input port of the another downstream combiner as the another upstream signal.

However, such a configuration is known in the art, as exemplified by Kim (Fig. 2, conveying an upstream signal from at least one of the users to an input port of 116). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to implement such a configuration for the method of the prior art of record. One of ordinary skill in the art would have been motivated to do this

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since the prior art of record is relatively silent about how each user might receive and transmit information through the system. Kim speaks into this silence with a typical example (col. 4, l. 1-3).

Giles in view of Dail, Krimmel, and Kim does not expressly disclose:

conveying a signal from at least one of *the* plurality of users to an input port of the another downstream combiner as the another upstream signal (emphasis Examiner's).

That is, the prior art of record does not expressly disclose that the plurality of users of Giles in view of Dail and Krimmel is the same plurality of users of Giles in view of Dail, Krimmel, and Kim. More exactly, the plurality of users of Giles in view of Dail and Krimmel receives broadcast signals, but Giles in view of Dail, Krimmel, and Kim does not expressly disclose the same. Nonetheless, the incorporation of broadcasting signals to a plurality of users that also conveys an upstream signal is known in the art, as exemplified by Schemmann (Fig. 1, broadcast signals of 106 to 134, which also conveys an upstream signal through 705). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to incorporate broadcasting signals with the same plurality of users of Giles in view of Dail, Krimmel, and Kim. One of ordinary skill in the art would have been motivated to do this since Giles and Dail and Krimmel all discuss the application of cable TV systems (Giles, col. 1, l. 43-47; Dail, abstract; Krimmel, p. 768, Introduction), which are extremely well known to conventionally include broadcasting signals.

12. **Claim 43** is rejected under 35 U.S.C. 103(a) as being unpatentable over Giles in view of Dail and Krimmel as applied to the claims above, and further in view of Shutterly (U.S. Patent No. 4,662,715).

**Regarding claim 43**, Giles in view of Dail and Krimmel does not expressly disclose:

The method of claim 12, further comprising distributing at least a portion of the another downstream signal to a plurality of users and conveying a signal from at least one of the plurality of users to an input port of the downstream combiner as the upstream signal.

These limitations correspond to the configuration of the add and drop buses with the associated users in Applicant's Fig. 1. However, this configuration is known in the art, as exemplified by Shutterly (buses with couplers and splitters in Fig. 2). At the time the invention was made, it would have been

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obvious to one of ordinary skill in the art to implement this configuration of buses in the method of the prior art of record. One of ordinary skill in the art would have been motivated to do this since the prior art of record is relatively silent about how each user might receive and transmit information through the system. Shutterly speaks into this silence with a suitable example (col. 4, l. 1-3) that avoids the signal loss associated with other possible methods for signal distribution (col. 2, l. 61-63).

13. **Claims 54, 57, and 58** are rejected under 35 U.S.C. 103(a) as being unpatentable over Giles in view of Dail, Krimmel, and Shutterly as applied to the claims above, and further in view of Cubukciyan et al. (U.S. Patent No. 5,289,554, hereinafter "Cubukciyan").

**Regarding claim 54**, Giles in view of Dail, Krimmel, and Shutterly discloses:

An apparatus (Giles, Fig. 9), comprising:

an upstream combiner including an upstream bi-directional common port (Giles, e.g., 98);

an optical signal conductor coupled to the upstream bi-directional common port of the upstream combiner (Giles, e.g., fiber between 98 and 100);

a downstream combiner including a downstream bi-directional common port (Giles, e.g., 100) coupled to the optical signal conductor (Giles, e.g., fiber between 98 and 100), wherein the downstream combiner directs an analog video optical carrier (Dail, downstream analog in Fig. 2, col. 4, l. 5-8, 26-27; Krimmel, analog CATV in Fig. 1) to a bandpass input-output port that is connected by an optical fiber (Giles, fiber(s) to receivers in 93 in Fig. 9) to an analog broadcast receiver (an upper receiver in 93 in Fig. 9 of Giles for receiving downstream analog of Dail; Krimmel, RX in BONT in Fig. 1);

another upstream combiner including another upstream bi-directional common port (Giles, e.g., 99);

another optical signal conductor coupled to the another upstream bi-directional common port of the another upstream combiner (Giles, e.g., fiber between 99 and 101);

another downstream combiner including another downstream bi-directional common port (Giles, e.g., 101) coupled to the another optical signal conductor (Giles, e.g., fiber between 99 and 101), wherein an optical output of an analog return transmitter (a transmitter in 91 in Fig. 9 of Giles for transmitting upstream analog of Dail in view of the combined analog signal and digital signal teachings of Krimmel) is

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connected by a separate optical transmission fiber (Giles, fiber(s) from 91 in Fig. 9) to an input-output port of the another downstream combiner (Giles, e.g., 101), which passes the analog return optical signal to the common port and then onto the another optical signal conductor (e.g., signal from 91 to 101 of Giles with the upstream analog of Dail in view of the combined analog signal and digital signal teachings of Krimmel);

a drop device coupled to a downstream output port of the another downstream combiner (Shutterly, e.g., 59 in Fig. 2);

a customer premises equipment digital receiver input coupled to the drop device (Shutterly, 137 in Fig. 2), the customer premises equipment digital receiver input including an input optical connector (Shutterly, connection from 137 to 80);

an add device coupled to a downstream input port of the downstream combiner (Shutterly, 46 in Fig. 2); and

a customer premises equipment digital receiver output coupled to the add device (Shutterly, 132 in Fig. 2), the customer premises equipment digital receiver output including an output optical connector (Shutterly, connection from 78 to 132).

Giles in view of Dail, Krimmel, and Shutterly does not expressly disclose:

wherein the input optical connector and the output optical connector define physically different, non-interchangeable form factors.

However, such form factors for an input optical connector and an output optical connector are known in the art, as shown by Cubukciyan (notice the two physically different, non-interchangeable form factors at the end of input and output connectors 4 in Fig. 1). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to employ such form factors for the connectors of the prior art of record. One of ordinary skill in the art would have been motivated to do this since they provide suitable connections for a transceiver (Cubukciyan, col. 1, l. 47), and the connectors of the prior art of record are employed by a transceiver (Shutterly, "terminal devices" in Fig. 2 that transmit and receive, i.e., transceivers).

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**Regarding claim 57**, Giles in view of Dail, Krimmel, Shutterly, and Cubukciyan discloses:

The apparatus of claim 54, further comprising a wavelength division multiplexer (Giles, the channel/wavelength labels for the middle two lasers in 90 should be switched with each other, and so would show wavelength multiplexing of f1 and f3 channels/wavelengths for the signal from 90 to 99) coupled to an upstream input port of the another upstream combiner.

**Regarding claim 58**, Giles in view of Dail, Krimmel, Shutterly, and Cubukciyan discloses:

The apparatus of claim 54, further comprising a wavelength division demultiplexer (Giles, lower demultiplexer in 92 in Fig. 9) coupled to an upstream output port of the another upstream combiner.

14. **Claims 55, 56, 60, 62, and 66** are rejected under 35 U.S.C. 103(a) as being unpatentable over Giles in view of Dail, Krimmel, Shutterly, and Cubukciyan as applied to the claims above, and further in view of Atlas (U.S. Patent No. 6,097,533).

**Regarding claims 55 and 56**, Giles in view of Dail, Krimmel, Shutterly, and Cubukciyan does not expressly disclose:

(claim 55) The apparatus of claim 54, further comprising an upstream input optical *isolator* coupled to an upstream input port of the another upstream combiner and an upstream output optical *isolator* coupled to an upstream output port of the another upstream combiner.

(claim 56) The apparatus of claim 54, further comprising a downstream input optical *isolator* coupled to a downstream input port of the another downstream combiner and a downstream output optical *isolator* coupled to a downstream output port of the another downstream combiner.

However, optical isolators are known to be extremely common optical elements. Notice the use of optical isolators in Atlas (120 and 122 in Fig. 16) to produce combiners/circulators (110 in Fig. 16). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to employ optical isolators in the combiners/circulators of the prior art of record (Giles, 98-101 in Fig. 9). One of ordinary skill in the art would have been motivated to do this since the prior art of record is relatively silent about how to exactly implement the combiners/circulators of the prior art of record (Giles, 98-101 in Fig.

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9). Atlas speaks into this silence with further details about a suitable implementation for these combiners/circulators of the prior art of record (Atlas, Fig. 16, col. 12, l. 59 – col. 13, l. 15).

**Regarding claim 60**, Giles in view of Dail, Krimmel, Shutterly, Cubukciyan, and Atlas discloses:

The apparatus of claim 54, further comprising an optical isolator coupled to the drop device (120 in Fig. 16 of Atlas in combiner/circulator 101 in Fig. 9 of Giles).

**Regarding claim 62**, Giles in view of Dail, Krimmel, Shutterly, Cubukciyan, and Atlas discloses:

The apparatus of claim 54, further comprising an optical isolator coupled to the add device (122 in Fig. 16 of Atlas in combiner/circulator 100 in Fig. 9 of Giles).

**Regarding claim 66**, Giles in view of Dail, Krimmel, Shutterly, Cubukciyan, and Atlas discloses:

A cable access television network, comprising the apparatus of claim 54 (Giles, col. 1, l. 43-47).

#### **Response to Arguments**

15. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection. Notice the application of teachings from newly discovered Krimmel. Krimmel expressly teaches the configuration of propagating an analog signal on an optical signal conductor and counter-propagating a digital signal on the same optical signal conductor (Fig. 1).

#### **Conclusion**

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID S. KIM whose telephone number is (571)272-3033. The examiner can normally be reached on Mon.-Fri. 9 AM to 5 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth N. Vanderpuye can be reached on 571-272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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/D. S. K./  
Examiner, Art Unit 2613

/Kenneth N Vanderpuye/  
Supervisory Patent Examiner, Art Unit 2613